

RENEWABLE ENERGY FEASIBILITY STUDY FOR CITY OF TUCSON CLOSED LANDFILLS

12/7/11

Vincent Mullins

46 KV power runs along the entire west border of the landfill. There is a flare station located at the center of the north border of the landfill. There is a power meter at the flare location. The landfill was officially closed in 2007 with Arizona Department of Environmental Quality (ADEQ). There are no cap restrictions given the proposed infrastructure is properly designed for landfills use. We will have to notify ADEQ and give them drawings prior to any construction on site. They require best management practices, a sealed design, and a letter that states the project will not increase leachate or methane production at the landfill. The landfill is registered with ADEQ under the state superfund program, WQARF due to groundwater contamination below the site from buried waste. The remedy in place is landfill gas extraction to remove the contaminants in the vapor phase in conjunction with the landfill gas.

Harrison

46 KV power runs along the entire south border of the landfill adjacent to Irvington Road. There is a flare station located at the center of the north border of the landfill. There is a power meter at the flare location. The landfill was officially closed in 1998 with Arizona Department of Environmental Quality (ADEQ). There are no cap restrictions given the proposed infrastructure is properly designed for landfills use. We will have to notify ADEQ and give them drawings prior to any construction on site. They require best management practices, a sealed design, and a letter that states the project will not increase leachate or methane production at the landfill. The landfill is registered with ADEQ under the state superfund program, WQARF due to groundwater contamination below the site from buried waste. The remedy in place is SVE (retired) and a groundwater pump and treatment system located at the northwest corner of the site.

Irvington

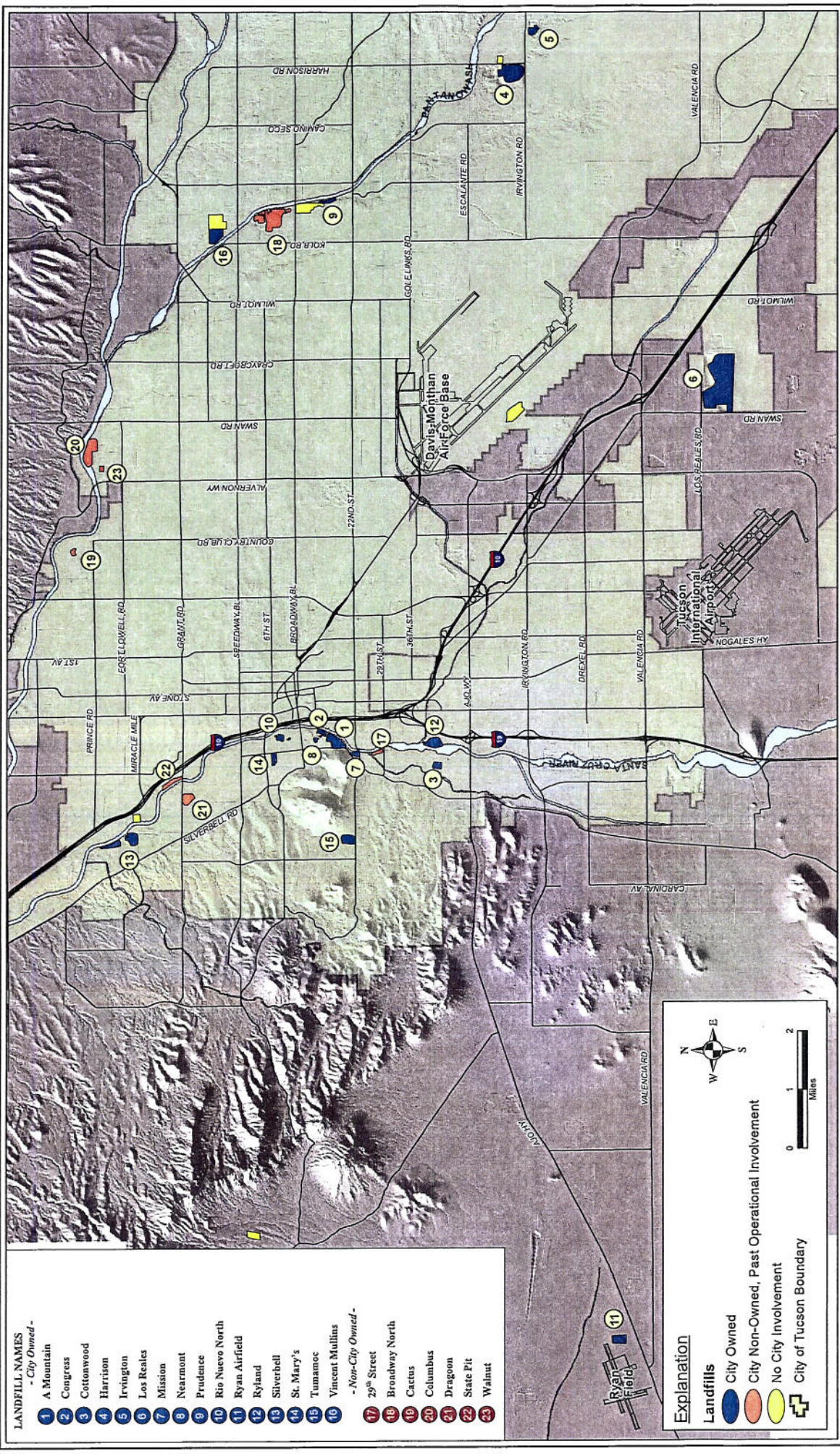
46 KV power runs along the entire north border of the landfill adjacent to Irvington road. Irvington landfill is located approximately 2000-feet southeast of Harrison landfill on the south side of Irvington Road. There is an overall site map of all of the landfills included in the report that is attached in the email. There is no flare station or power meter on the Irvington site. The landfill was officially closed in 2010 with Arizona Department of Environmental Quality (ADEQ). There are no cap restrictions given the proposed infrastructure is properly designed for landfills use. We will have to notify ADEQ and give them drawings prior to any construction on site. They require best management practices, a sealed design, and a letter that states the project will not increase leachate or methane production at the landfill. The landfill is not contaminated and is not registered with ADEQ under the state superfund program. We added this landfill since it is in close proximity to Harrison and is available.

Silverbell

46 KV power runs along the southwest corner of the south cell. ES has a power drop and meter located between the north and south cells used to power remediation equipment. It is a 480 volt, 220 amp metered power source. There is no flare station on the site. The landfill was closed in 1975 and is not a RCRA regulated site. The area is inspected and maintained by the City under a policy administered in 1996. There are no cap restrictions at the site and minimal cover over the waste. The landfill is registered with ADEQ under the state superfund program, WQARF due to groundwater contamination below the site from buried waste. We have installed an SVE system to clean up the vadose zone and are currently designing a groundwater pump and treatment system for the site.

Ryland

46 KV power runs along the entire west border of the landfill. There is no flare station or power meter on the site. The landfill was closed in 1965 and is not a RCRA regulated site. The area is inspected and maintained by the City under a policy administered in 1996. There are no cap restrictions at the site and minimal cover over the waste. The landfill is not contaminated and is not registered under the state superfund program.



LANDFILL NAMES

- City Owned -

- 1 A Mountain
- 2 Congress
- 3 Cottonwood
- 4 Harrison
- 5 Irvington
- 6 Los Reales
- 7 Mission
- 8 Nearmont
- 9 Prudence
- 10 Rio Nuevo North
- 11 Ryan Airfield
- 12 Ryland
- 13 Silverbell
- 14 St. Mary's
- 15 Tumanoc
- 16 Vincent Mullins

- Non-City Owned -

- 17 29th Street
- 18 Broadway North
- 19 Cactus
- 20 Columbus
- 21 Dragon
- 22 State Pit
- 23 Walnut

Explanation

Landfills

- City Owned
- City Non-Owned, Past Operational Involvement
- No City Involvement
- City of Tucson Boundary



Landfill Location Map for City Owned and/or Operated Landfills

Drawn By: LB
Checked: MC
Approved: JD
Date: 2/7/2011
File: See Below
1:012546.mxd 38.00 Lat 110.00 Long

TABLE 1
City Owned Closed Landfills
March 2011

LANDFILL CHARACTERISTICS														LANDFILL EQUIPMENT				
Map ID	Landfill Name	Location	Waste Footprint (acreage)	Parcel Size Sum (acreage) ¹	Operation Dates	Permit/Regulatory Status	Inspection Dates	Refuse Type	No. of LFG (shallow) Soil Vapor Probes	LFG Extraction System	No. of Deep Soil Vapor Probes	No. of Groundwater Monitor Wells	Groundwater Remediation System					
Regulated Closed Solid Waste Facility																		
1	Harrison	9245 & 9475 E. Irvington Rd.	64.7	111.4	1972-1996	Closed Solid Waste Facility - ADEQ Regulated by CAP	April and October	MSW	53	X	16	15	X					
2	Irvington	9900 E. Irvington Rd.	12.8	46.6	1978-1988	Closed Solid Waste Facility - ADEQ Regulated by APP	within quarters ending in March 31, June 30, September 30, and December 31	MSW	14		4	4						
3	Vincent Mullins	near Pantano Wash and Speedway Blvd.	36.0	51.6	1976-1987	Closed Solid Waste Facility - ADEQ Regulated by APP	April and October	MSW	23	X	12	14						
Non-Regulated Closed Solid Waste Facility																		
1	A Mountain	945 W. Mission Ln	31.4	31.3	1953-1962	Closed Solid Waste Facility ²	within the last quarter of the calendar year	MSW	8		-	3						
2	Congress & Neamount Landfills (Rio Nuevo South Landfill Stabilization Project)	351 S. Brickyard Ln	9.6	27.0	1953-1967	Closed Solid Waste Facility ²	within the last quarter of the calendar year	MSW	21		-	8	X					
3	Cottonwood	3200 S. Cottonwood Ln	10.0	13.4	1973-1985	Closed Solid Waste Facility ²	within the last quarter of the calendar year	MSW	16		4	3						
4	Mission	1056 S. Mission Rd	7.6	5.3	1963-1970	Closed Solid Waste Facility ²	within the last quarter of the calendar year	Primarily inert Solid Waste	3		-	-						
5	Prudence	near 22nd Street and Pantano Wash	8.5	13.7	1974-1978	Closed Solid Waste Facility ²	within the last quarter of the calendar year	MSW	20	X	12	3						
6	Rio Nuevo North	401 N. Bonita Ave	9.1	-	1960-1971	Closed Solid Waste Facility ²	within the last quarter of the calendar year	MSW	17	X	-	1						
7	Ryan Airfield	9698 W Ajo Way	16.0	- ³	1973-1977	Closed Solid Waste Facility ²	within the last quarter of the calendar year	MSW from Avra Valley area	-		4	3						
8	Ryland	Santa Cruz River and Ajo Way	27.0	62.2	1960-1965	Closed Solid Waste Facility ²	within the last quarter of the calendar year	MSW	-		4	4						
9	Silverbell	3600 N. Silverbell Road	45.8	73.0	1966-1975	Closed Solid Waste Facility ² and ADEQ WQARF Site	within the last quarter of the calendar year	MSW	18		84	44						
10	St. Mary's	425 N. Grande Ave	10.5	-	1963-1973	Closed Solid Waste Facility ²	within the last quarter of the calendar year	Primarily inert Solid Waste	27		-	-						
11	Tumamoc	2100 W. Starr Pass Blvd	21.0	26.5	1962-1966	Closed Solid Waste Facility ²	within the last quarter of the calendar year	MSW	9		-	14						

Notes:

¹ Parcel Size Sum is the available undeveloped land including landfill area. If no area entered then area is fully developed

² Not subject to regulation by ADEQ Solid Waste Unit (ARS § 49-701 (3)(b)).

³ Landfill located next to air runway. Parcels owned by City of Tucson and are leased by TIAA

ADEQ = Arizona Department of Environmental Quality

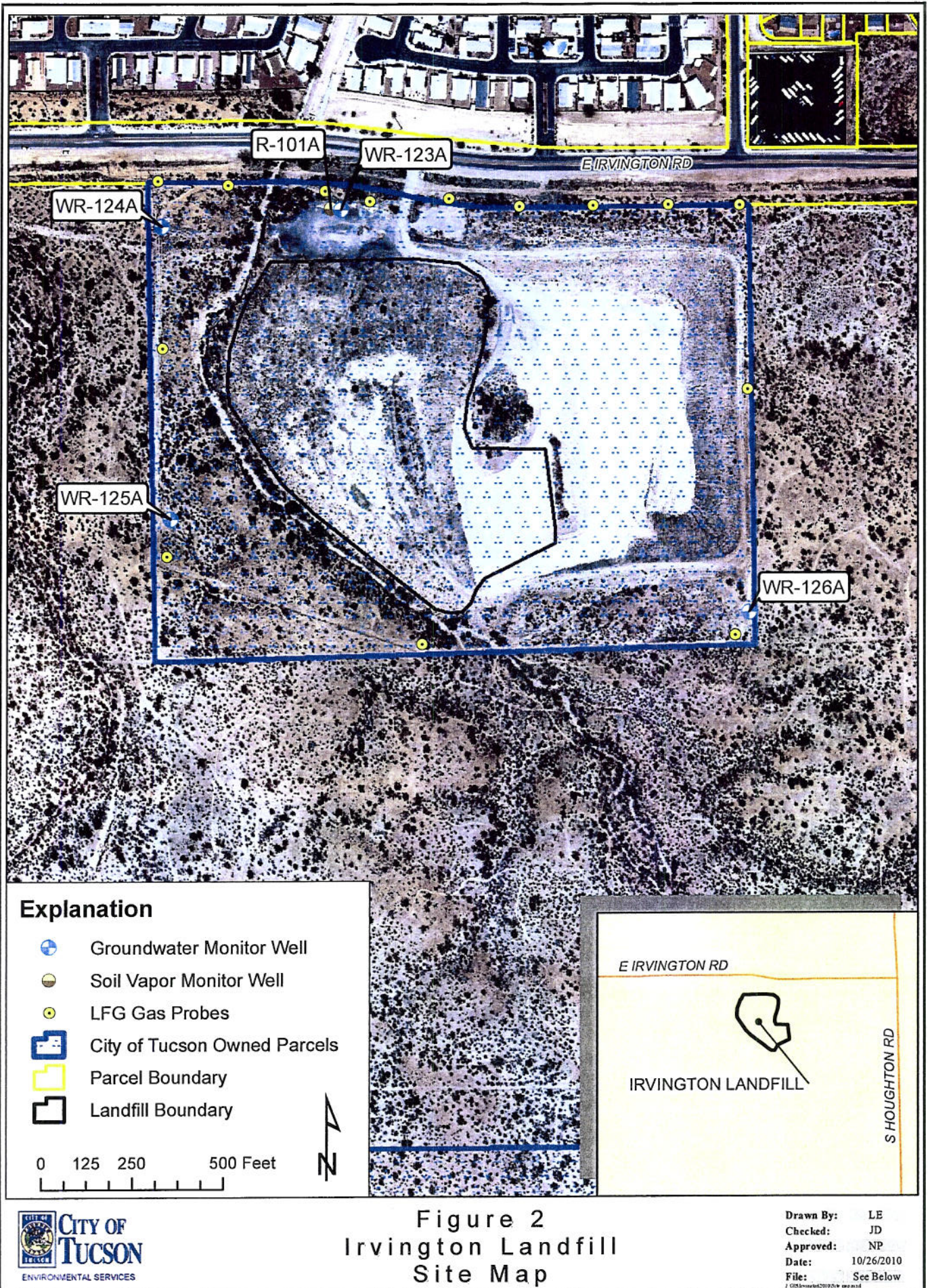
APP = Aquifer Protection Permit

LFG = Landfill Gas

CAP = corrective action plan

MSW = municipal solid waste.

WQARF = Water Quality Assurance Revolving Fund (State Superfund)



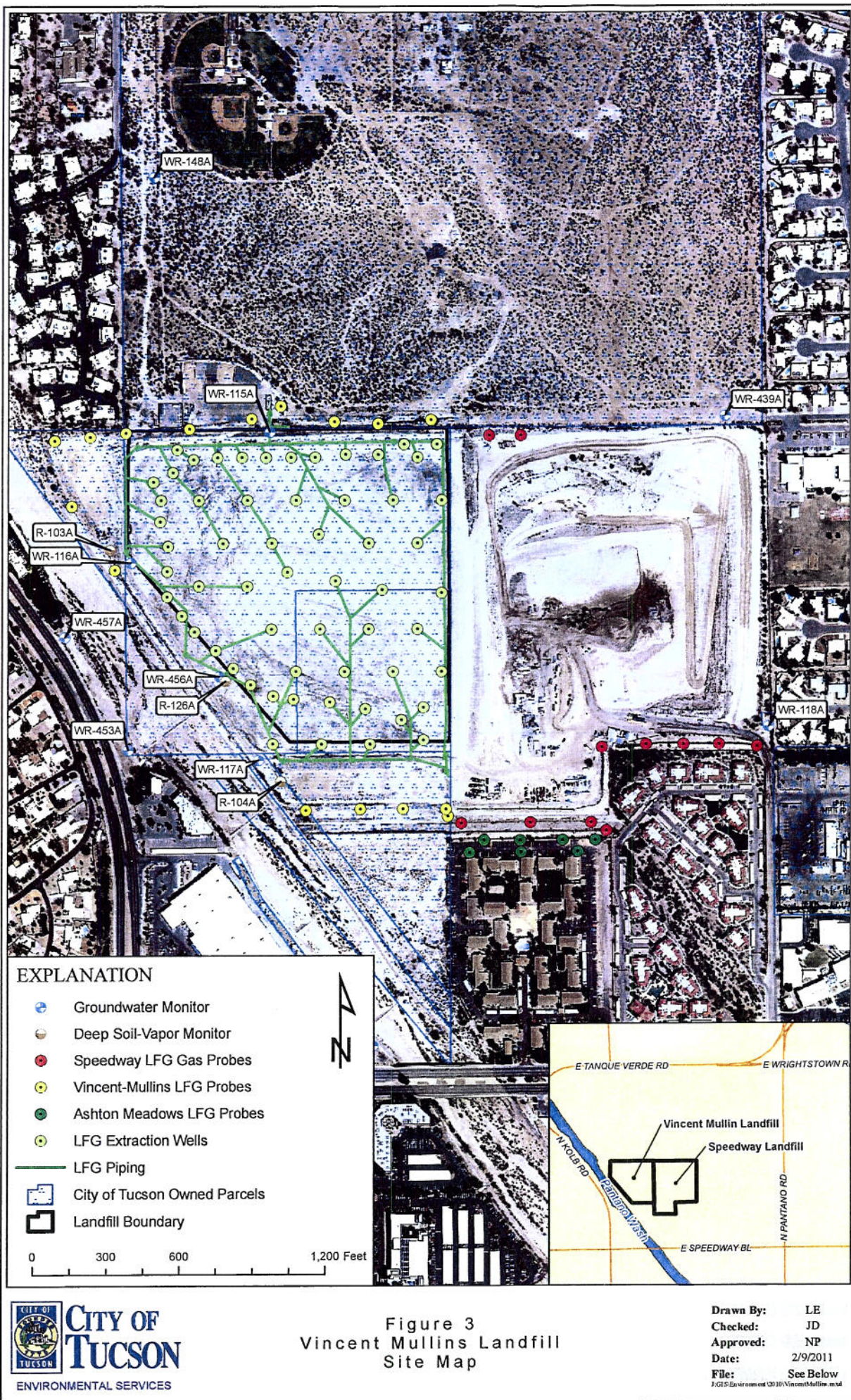




Figure 8
Ryland Landfill
Inspection Site Map



Figure 9
Silverbell Landfill
Inspection Site Map